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Livestock and Products

Household Plots: Small Size, Big Impact

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Report Highlights:

Household plots have played a key role in Russian agriculture in the past decade, especially in livestock production. These small producers continue to produce almost 50 percent of all domestic meat, which accounts for 35 percent of total Russian consumption of meat. While the government continues to support large-scale farms, small-scale farms make the best of scarce inputs and infrastructure. Though not closely linked to the retail market or processors, small farmers are expected to satisfy local demand for fresh meat in the regions and in smaller population centers for years to come.

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Table of Contents

Executive Summary.....	3
Note: Definitions and Data.....	3
Table 1. Number and Employment of Livestock Operations	4
Livestock and Meat Production	4
Structure and Production	4
Table 2. Structure of Production of Meat and Milk by Category of Farm	4
Table 3. Number of Animals on All Farms.....	5
Table 4. Index of the Volume of Livestock Production Per Category of Farm.....	6
Table 5. Livestock Per Category of Farm	7
Industry Growth	8
Table 6. Production of Meat and Poultry on All Types of Farms	8
Infrastructure, Investment, and Taxes:	8
Efficiency.....	9
Table 7. Livestock Productivity on Ag. Organizations	10
Table 8. Livestock Loss in Ag. Organizations	10
Secondary Businesses	10
Feed	10
Table 8. Production of Meat and Meat Products.....	11
Markets and Processors.....	11
Demand.....	12
Supply.....	12
Summary.....	13
Table 9. The Most Efficient Swine Farms of Russia, as an average of 1998-2002	15

Executive Summary

Livestock production has changed significantly since the collapse of the Soviet Union. One of the most enduring structural changes has been the rise of the small farm (household plots) in terms of overall meat production. Small farms now account for over 50 percent of the meat produced in Russia, which is 35 percent of total Russian consumption. While these producers are generally maintaining their size and production volumes, many changes are going on around them as the larger farms begin to use size and efficiency to reassert themselves in the marketplace. Nevertheless, small farms are going to be a major force in livestock production for at least a decade. Following the trends and changes between small and large livestock producers is the key to understanding the newly developing Russian livestock sector.

Note: Definitions and Data

All of the data presented in this report come from the State Statistics Committee of the Russian Federation. As such, understanding the classification and definitions are crucial to understanding the data available, especially as it relates to types of farms. As this is the primary source of information in Russia on the structure of agricultural producers and livestock holdings, other sources of data will not be used in the sections relating to producer structure and livestock holdings for consistency and clarity. Estimates from publications that present differing information, such as the USDA/FAS Livestock and Poultry Production, Supply, and Distribution estimates, will not be used in order to maintain continuity in dealing with Russian statistics and methodology and discussing overall industry trends.

Due to the development of the agricultural sector in Russia in the past decade, defining and classification of agricultural producers is difficult. The following three definitions are used by the State Statistics Committee to define categories of agricultural producers:

Agricultural Enterprises: includes collective and state farms, joint stock companies and partnerships of all types, agricultural cooperatives, farming units affiliated with industrial, transportation and other enterprises, organizations and scientific research institutes.

Private Households: includes rural households with land estates, kitchen gardens, and horticultural partnerships. This includes forms of agricultural production when an individual or a family manufactures commodities to satisfy the family needs in foods or with other purposes. Also called household plots or small farmers. (Khozyaystvo Naselineya)

Private Farming: a form of free enterprise. Using owned or rented lands and other assets, a private farmer operates his business unit to produce, process, and market agricultural commodities. However, at this time, this group is also generally considered to be small farmers. (Krest'yanskoe Khozyaystvo)

To summarize, the agricultural enterprise category includes the largest farm holdings, such as the large former state and collective farms still struggling with post Soviet realities and large, modern, and efficient corporate-style holdings. Private households comprise individual and family rural households that produce primarily for personal consumption, but also market a certain percentage of its commodities to supplement family income. Lastly, private farming is very similar to private households, but the "farm" is registered as a business. It is easiest to think of agricultural enterprises as large farms, while the other two categories are small farms. In terms of livestock, production is roughly split between agricultural organizations and small farms (mainly private households, though private farming play a small role).

Table 1. Number and Employment of Livestock Operations

	1995	1996	1997	1998	1999	2000	2001	2002
Agricultural Organizations								
Total Number	26,900	26,900	27,000	27,300	27,928	28,469	29,613	29,911
Total Number of Workers (mln.)	6.7	6.2	5.7	5.3	5.1	4.7	4.2	
Average Workers Per Farm	249	231	211	194	187	170	169	
Private Households								
Number of Families (mln.)	16.3	16.3	16.4	16.0	15.5	16.0	16.0	16
Private Farming								
Number of Registered Farms (1,000)		280	279	274	270	261	266	264

Source: Russian State Statistics Committee

Livestock and Meat Production**Structure and Production**

The structure of the Russian livestock sector differs significantly from the grains sector due to role played by the small farms. While agricultural organizations produce approximately 80 percent of all grains, they produce less than 50 percent of animal products and milk.

Table 2 shows the rough distribution of meat and milk production among the three types of farms. This simple table illustrates the evolution of the Russian livestock sector in recent years and also provides a look at the problems that face further development of livestock production in Russia. The best way to follow the post-Soviet trend and to understand the future of livestock production is to look at the largest farms, the agricultural organizations.

Agricultural organizations were the lifeblood of the Soviet agricultural system and the category of farm that is still struggling to come to terms with this legacy. This type of farm went from producing 80 percent of all meat to less than 50 percent today. These organizations acted as the main commercial producers and led in all areas relating to efficiency, research, and management.

Table 2. Structure of Production of Meat and Milk by Category of Farm

	1995	1996	1997	1998	1999	2000	2001	2002
as % of all types of farms								
Agricultural Organizations								
Meat*	49.9	46.7	42.5	41.5	38.9	40.3	41.0	42.6
Milk	57.1	53.1	51.3	50.1	48.6	47.3	47.2	47.7
Private Households								
Meat*	48.6	51.6	55.9	56.9	59.4	57.9	57.1	55.3
Milk	41.4	45.4	47.2	48.3	49.7	50.9	50.9	50.3
Private Farming								
Meat*	1.5	1.7	1.6	1.6	1.7	1.8	1.9	2.1
Milk	1.5	1.5	1.5	1.6	1.7	1.8	1.9	2.0

* Slaughter weight

Source: Russian State Statistics Committee

However, the withdrawal of massive Soviet subsidies to the livestock sector is still taking its toll. The entire sector went through the trauma in the 1990's in terms of debt, re-structuring, and bankruptcy. This had serious repercussions for the rural population, causing dislocation and joblessness. The rural population was forced to rely even more heavily on its own production of meat, i.e. household plots. This transition was a continuous and dynamic process that played out through the 1990's, but has now stabilized. It is considered stabilized because most former collective or state farm workers or rural people have long been forced to supplement the family's food and income with this small-scale and low-technology production. The people making this transition were either past or even active workers on the larger farms. In fact, these past and present employees often took advantage of the disarray on the larger farm to utilize inputs from the nearby agricultural organization or to put in more work on the family plot. However, the last major jump in the share of total production associated with an increase in herd size from private households can be associated with the 1998 Russian economic crisis. While Table 5 notes the increase in herd size, it is not translated into an increased volume of production (Table 2). This is explained by the fact that the years after the crisis also correspond to the start of efficiency increases on the larger farms.

Overall, the number of workers on the agricultural organizations has decreased by about 35 percent from 1995-2001, while the number of organizations decreased by only eight percent. During that same period, the agricultural organization's share of total Russian production went down by nine percent in meat products and by ten percent in milk. The private households captured almost that entire production share. At first this seems like quite an achievement, but Table 5 shows that this is really only attributable to the collapse of the agricultural organizations, not the growth of the private households.

The agricultural organizations decreased their beef cattle herds from approximately 17 million head in 1996 to only 9.7 million in 2002. More dramatically, the beef herd on the large agricultural organizations is down from over 33 million in 1990. The private households actually increased their beef cattle herd size by a total of nine percent from 1996-2003. This growth represented the only herd increase in either beef or dairy categories by either agricultural organizations or private households between 1996-2002. The overall drop in the beef cattle herd was the greatest of all key livestock sectors. Naturally, the main reasons beef cattle were least preferred during this period (and remain so) is the slow return on investment versus dairy cows, swine, and poultry due to the natural lag time in providing meat products. Thus, when decisions were being made regarding the use of scarce fodder resources during hard winters or

needing to slaughter animals to maintain cash flow, beef cattle were the first animals on the farm to be sold. Conversely, the slow reproduction and growth rate also continue to re-direct

Table 3. Number of Animals on All Farms

	Beef Cattle	Dairy Cows	Swine
	Million Head		
1916	15.7	17.3	11.3
1930	12.5	17.9	6.9
1950	17.8	13.7	10.7
1970	29.0	20.4	27.4
1990	38.0	20.8	40.0
1991	36.5	20.5	38.3
1992	34.1	20.6	35.4
1993	32.0	20.2	31.5
1994	29.1	19.8	28.6
1995	24.9	18.4	24.9
1996	22.3	17.4	22.6
1997	19.2	15.9	19.1
1998	17.0	14.5	17.3
1999	15.0	13.5	17.2
2000	14.9	13.1	18.3
2001	14.6	12.7	15.7
2002	14.9	12.2	16.0
2003	14.9	11.7	17.0

Source: Russian State Statistics Committee

investment and resources to sectors that present lower long-term risk (price/market risk). While the long-term risk aspect is less important in 2003 due to a stable currency, lower interest rates, and increasing consumer demand, during most of the post-Soviet period these risks made beef production less attractive.

Moreover, as the process of transition continued, the production of beef started to fall at a faster rate than the other meats. This is the result of the continued crisis decision making that forced farms to cut animal numbers, under which beef cattle were often the least profitable option. During the second half of the 1990's, beef production fell a further 32 percent. At that point, poultry production was already on the rise and pork production had bottomed out, making either a much better investment. Moreover, this trend in beef cattle has continued up to 2004 due to stiff competition from the other meats and several recent poor years of fodder production.

Table 4. Index of the Volume of Livestock Production Per Category of Farm

Year	All Farms	Ag. Org.	Private Households	Private Farming
1995 = 1000				
1996	89	82.9	97.6	97.4
1997	84.6	76.8	95.6	92.2
1998	83.1	73.7	95.4	96.1
1999	82.5	71.1	96.5	94.2
2000	83.2	71.1	97.8	95.7
2001	86.1	75.1	99.6	104.4
% of previous year				
1995	89.6	85.1	95.7	101.2
1996	89	82.9	97.6	97.4
1997	95	92.7	98	94.7
1998	98.2	96	99.8	104.2
1999	99.3	96.5	101.2	98
2000	100.8	100	101.3	101.6
2001	103.5	105.6	101.8	109.1
2002	101.7	101.1	115.4	101.2

Source: Russian State Statistics Committee

The dairy herd suffered the same fate as the beef herd in the period 1996-2002 for most of the same reasons, though the drop in the large farm herd size was greater. This is due to the faster rate of return on milk products and fewer competitive food products. Large cities were a lifeline to dairy producers due to the consistent demand for dairy products. Moreover, dairies were also able to get a consistent supply from smaller producers and old milk cows could at any time be used for meat, which increased their value as a store of wealth. Last, milk could act as currency or barter in the rural communities. Though milk can provide a consistent revenue stream, rural communities lack the infrastructure to take full advantage of large supplies of fluid milk. Very few of the private households have the equipment to store and preserve milk and there are relatively few

customers in the surrounding village. The lack of transportation (few poor households would have independent transportation suitable for daily trips to the market) and storage would also reduce the prices received. Thus, a milk cow's value would be relatively higher than a beef cow, but lower than poultry and swine.

In contrast to the beef and dairy industries, the pork industry has been growing since 2001. Swine production has a rate of return on investment second only to poultry production. As Table 6 shows, poultry production started to rebound in 1997 and pork production looks set to follow the same trend, only starting in 2001. Profitable pork production is unlike poultry in that it is still profitable and accessible for small farmers. Thus, Table 5 shows that swine numbers are on the rise in both the large and small farms. Swine production also offers advantages over cattle production due to the smaller amount of space needed, the higher number of offspring, and quicker growth. These natural advantages make swine production much more flexible and a more attractive place to invest small amounts of money.

However, over time production of pork on large farms seems more likely to overtake small farm production due to the return of large-scale investments in technology and infrastructure (described below and in Tables 7 and 8). As capital-intensive operations have shown that significant profits can be made in pork production, investments have begun to flow into pork producers with a production base but not the capital and expertise to break into truly modern production. As in poultry, there is a period when a critical mass of companies with capital and talented managers expand and turn floundering operations into successful ones. This critical mass also applies to demand for inputs such as high quality feeds, veterinary medicine, and managerial knowledge. Table 9 shows the ten most profitable pork producers in Russia and the large profits that can be made under efficient management. Given the payback period for investments into the pork industry are much shorter than in beef and dairy, the high profit generated by top firms is an obvious magnet for those willing to invest in livestock or poultry.

Table 5. Livestock Per Category of Farm

As of 1 Jan., thousand head	1996	1997	1998	1999	2000	2001	2002	2003
Ag. Organizations								
Beef Cattle	17,270	14,545	12,543	10,814	10,546	10,023	9,728	9,728
Dairy Cows	10,455	9,139	8,049	7,240	6,907	6,486	6,089	5,632
Swine	14,714	11,541	10,068	9,476	9,971	8,518	8,678	9,148
Private Households								
Beef Cattle	4,689	4,418	4,188	3,940	4,081	4,334	4,841	5,117
Dairy Cows	6,705	6,483	6,237	5,979	5,984	5,918	5,849	5,797
Swine	7,556	7,246	6,962	7,393	7,834	6,791	6,924	7,352
Private Farming								
Beef Cattle	301	266	253	255	262	277	322	379
Dairy Cows	276	252	250	253	252	256	278	300
Swine	361	328	318	379	466	398	446	473
Total								
Beef Cattle	22,260	19,229	16,984	15,009	14,889	14,634	14,891	15,224
Dairy Cows	17,436	15,874	14,536	13,472	13,143	12,660	12,216	11,729
Swine	22,631	19,115	17,348	17,248	18,271	15,707	16,048	16,973
Percent of Total Herd	1996	1997	1998	1999	2000	2001	2002	2003
Ag. Organizations								
Beef Cattle	77.6%	75.6%	73.9%	72.1%	70.8%	68.5%	65.3%	63.9%
Dairy Cows	60.0%	57.6%	55.4%	53.7%	52.6%	51.2%	49.8%	48.0%
Swine	65.0%	60.4%	58.0%	54.9%	54.6%	54.2%	54.1%	53.9%
Private Households								
Beef Cattle	21.1%	23.0%	24.7%	26.3%	27.4%	29.6%	32.5%	33.6%
Dairy Cows	38.5%	40.8%	42.9%	44.4%	45.5%	46.7%	47.9%	49.4%
Swine	33.4%	37.9%	40.1%	42.9%	42.9%	43.2%	43.1%	43.3%
Private Farming								
Beef Cattle	1.4%	1.4%	1.5%	1.7%	1.8%	1.9%	2.2%	2.5%
Dairy Cows	1.6%	1.6%	1.7%	1.9%	1.9%	2.0%	2.3%	2.6%
Swine	1.6%	1.7%	1.8%	2.2%	2.6%	2.5%	2.8%	2.8%

Source: Russian State Statistics Committee

Note: In reviewing and comparing the production and herd data on agricultural organizations versus the small farms, there is a large difference between the herd size and the actual meat production. For example, agricultural organizations kept over 50 percent both beef cattle and swine, but produced only 43 percent of the animal products from those animals in 2002. The discrepancy is believed to be due to a combination of several factors influencing the actual marketing of the animals for slaughter. The main reason is most likely that private farmers slaughter at a higher weight, as small farmers are less impacted by feed shortages (they have so few animals and feed them various non-traditional feedstuffs) and sell older (heavier) milk cows and bulls. Agricultural organizations are more likely to use various methods to reduce the number of officially marketed animals in order to reduce taxes (by reducing sales and revenues), may be involved in barter arrangements with input suppliers, or have their own slaughter houses which underreport capacity and pay employees in-kind.

Industry Growth

The description of the structure of Russian livestock production is very important in understanding the future trends in meat and dairy production in Russia. Specifically, it illustrates the hurdles facing Russia in terms of increasing overall meat production. Namely, the small producer structure and capacity are not expected to grow due to the capital, time, and area constraints of these very small farmers. While co-ops exist in Russia, their development has unfortunately been very slow and has a small overall impact. Thus, despite the overall size of production attributed to the small farmers, they play little role in developing and increasing Russian meat production in the medium to long term. It should be thought more as a social safety net in terms of providing the farmers, their families, and the local population with a relatively stable and consistent supply of basic protein.

While providing a social safety net is extremely valuable, the alternative problem is that small farmers do not add value to the agricultural economy in the way larger farms can. This means that the small farmers are a relatively unorganized section of productive capacity that does not create a multiplier effect in the agricultural/rural sectors. Key differences between large and small farms can be accounted for in several broad areas: infrastructure and investment; efficiency; taxes; secondary businesses; and development of the processing sector.

Table 6. Production of Meat and Poultry on All Types of Farms

	Average 1991-1995	Average 1996-2000	1995	1996	1997	1998	1999	2000	2001	2002
slaughter weight, thousand tons										
Beef	3,391	2,207	2,734	2,630	2,395	2,247	1,868	1,895	1,872	1,957
Pork	2,475	1,562	1,865	1,705	1,546	1,505	1,485	1,569	1,498	1,583
Poultry	1,277	705	859	690	630	690	748	766	884	953

Source: Russian State Statistics Committee

Infrastructure, Investment, and Taxes:

Large businesses in rural Russia play an important role in maintaining and creating infrastructure. This applies to the businesses' own property, as well as roads, bridges, and other public infrastructure which may be adjacent or even fairly far from the production site. These companies take this responsibility in order to maintain sufficient infrastructure to maintain their own business in the absence of local and regional government assistance in creating the necessary infrastructure to conduct business over relatively long distances and

sometimes sparsely populated areas. This practice is usually focused on transportation and input supplies (feed and fuel). Often, this also takes the form of continuing to own secondary businesses to ensure the provision of basic supplies and services. Large farms often focus on maintaining social programs in order to retain good workers, a large problem due to urban migration.

The small farmers are often practicing close to subsistence farming and do not have the resources to devote to non-essential projects. Each private farmer is struggling to make ends meet and cannot focus on investments in areas that will boost the productive capacity of his village or region.

Similarly, many of the small farmers are not in the mainstream of the Russian economy and their production and sales are not always reflected in the collection of various taxes. While this is a problem that Russia is facing on a larger scale both in and out of agriculture, the tax base of rural areas is so small that this is a significant issue. As a result, local and regional governments with a heavily rural character generally have difficulty providing local services and supporting businesses. Alternatively, those few regions that have other natural resources (oil, gas, metals) often cross-subsidize the agricultural sector.

Efficiency

Large farms play a vital role in linking practical management knowledge and scientific research to the livestock sector. Small farms are not able to play this role because these farmers do not have the capital, time, or space to act as sources or implementers of modern animal management techniques. Therefore, essentially only half of the Russian livestock herd/sector (agricultural organizations) is participating in the creation and dissemination of western and Russian modern livestock management techniques. The deficiencies come primarily in the areas of research/extension and breeding.

The small farmers do not have the resources to participate in breeding programs and are limited in their ability to purchase superior quality replacement livestock. This means that generally 34 percent of the beef herd, 48 percent of the dairy herd, and 43 percent of the swine herd is neither participating in efficient genetic improvement programs nor providing information to researchers and breeders (this percentage is probably much higher considering the large number of near bankrupt agricultural organizations). This decreases the market for those breeders that are working to improve the quality of the Russian livestock herd and does not provide scientific knowledge regarding the breed and characteristics that prosper in the various climates of such a large country. While the private farmers clearly do the best they can under the circumstances, they do not add much to the livestock management and breeding programs that are necessary for the rebuilding of the Russian livestock industry.

Alternatively, the agriculture organizations have shown great strides in the past few years in improving efficiency on the farm. As Tables 7 and 8 show, agricultural organizations have been successful in recent attempts at remedying possibly one of the biggest problems with Soviet livestock production, lack of efficiency. While beef cattle weight gain has only increased 16 percent in the last four years, swine weight gain is up 49 percent. Improvements in swine productivity show up across the board, while beef cattle productivity clearly lags behind. The areas that are crucial for increasing efficiency are those that are difficult for the private farmers; feed, management techniques, infrastructure, and veterinary medicines. Though these factors increase efficiency, they are capital intensive and difficult for the private farmers to afford. The tables show that the areas that are weakest for small producers are where the larger agricultural organizations are making efficiency strides.

While these efficiency gains are impressive, it also illustrates how far Russia has fallen behind in overall industry productivity.

Table 7. Livestock Productivity on Agricultural Organizations

	1995	1996	1997	1998	1999	2000	2001	2002
Annual Milk Yield per Cow (Kg)	2,153	2,144	2,239	2,381	2,432	2,341	2,551	2,878
Beef Cattle - Daily Weight Gain (g)					331	333	361	385
Swine - Daily Weight Gain (g)					171	187	232	254

Table 8. Livestock Loss in Agricultural Organizations

	1995	1996	1997	1998	1999	2000	2001	2002
Productivity*								
Calves	73	70	72	74	76	77	76	78
Piglets	973	899	1,029	1,136	1,261	1,155	1,360	1,416
Loss as a Percent of Herd								
Beef Cattle	6	6.4	5.5	5	4.2	3.9	3.2	3
Swine	15.5	14.9	12.7	11.6	11.5	11.3	9.9	9.6

*Surviving offspring per 100 females per year.

Source: Russian State Statistics Committee

Secondary Businesses

The creation of secondary agribusiness companies is similar to the efficiency issue in that the private farmers do not have the capital and resources to create a market for secondary products and inputs. Only the agricultural organizations have the scale and demand to support secondary businesses that provide inputs or specialized services. However, as there often are relatively few financially strong agricultural enterprises in close proximity, they often own the second business rather than buy inputs or services from independent companies (though this tendency seems less strong in the grain sector). The lack of a fully competitive market for goods and services often means that farms have little or no choice from whom to buy inputs and services, which artificially raises prices on inputs. The development of secondary businesses is taking place in some regions and it has helped to lower input costs, offer a broader array of services, and increased knowledge to those areas.

Feed

A very difficult question relating to livestock production today revolves around feed usage. This question is difficult due to the changing efficiency and size of large agricultural organizations and the heterogeneity of the small producers and how they operate. The question of large producers is clearer; they either produce their own feed or purchase it. These activities allow for rather transparent accounting in terms of supply, use, and demand for grain and feeds.

Small farmers pose a much more difficult statistical problem because they are often below the market "radar screen." It is clear that these farmers feed their animals a much wider variety of feeds, from traditional feed to table scraps. What is unknown is the overall, average feed composition. However, it is generally assumed that small farmers get a majority of their feed from non-market sources. This means that the farmer is raising some grain, buying it in kind from neighbors, feeding higher rates of easily grown or collected feed like hay and straw, or stealing or buying in-kind from the local agricultural organization.

Regardless of the origin, most of this feed is non-market (and not accounted for by statistical agencies).

Table 8. Production of Meat and Meat Products

	1995	1996	1997	1998	1999	2000	2001	2002
Canned Meat (mln. Cans)								
Meat	348	380	326	344	500	437	464	495
Dairy	527	544	569	615	538	620	677	714
Meat (thousand ton) cat. 1					1,113	1,193	1,284	1,390
beef and veal	1,106	901	705	553	404	389	382	NA
lamb	36.5	20.6	13.4	8	6.5	5.2	5.4	NA
pork	612	480	366	288	232	279	275	NA
poultry	497	378	333	390	427	476	573	NA
other or sub-products	110	96.2	76.2	38.8	35.2	40.2	48.1	NA
Sausage	1,293	1,296	1,147	1,087	948	1,052	1,224	1,443
Semi-finished meat products	268	255	226	219	198	244	338	NA
Butter	218	193	174	185	185	221	255	NA
Dry Milk	3.4	3.3	3	3.1	3.8	4	5.3	NA
Meat and Bone meal	303	245	192	198	174	189	238	NA

Source: Russian State Statistics Committee

Having largely non-market feed supplies has unusual ramifications. As historical data shows (Table 5), small farmers have not really shown significant production variability as a result of either economic meltdowns or overall Russian feed production declines. First, this indicates that these farmers are not going away in terms of overall number of participants (Table 1) or production (Table 5). Secondly, to be able to keep a relatively stable production, they seem very capable of finding feed supplies under dire economic or agronomic circumstances. Most likely, much of this can be explained simply that it is easier to consistently find feed for ten animals for the winter than 10,000. It remains to be seen whether these farmers will ever be drawn wholly into the input market due to supply constraints in far villages and existing non-market feed networks.

Lastly, this has important implications for the evaluation of the Russian grain market. First, the feed being used by these farmers is not well understood and probably varies greatly from year to year and among regions. The questions that remains is how much feed is being produced and consumed in Russia that is not statistically being accounted for and how much feed will be needed if these farmers eventually make the shift into the commercial feed market? Regardless, from a domestic policy standpoint, it is concerning that as much as one half of Russian livestock production is essentially outside of the commercial feed market. The above problem, in addition to the general grain market problems with transparency, interregional administrative barriers, and transportation infrastructure, make setting grain trade policy very difficult.

Markets and Processors

Having this dichotomous situation between the agricultural organizations and the private farmers also distorts and retards the meat market. The current structure favors sales directly to the wet markets and to small traders and processors. It is very difficult and time consuming for the large processors to work with the small producers and most are striving to build and maintain supplier networks amongst the agricultural enterprises and even the small farmers. Most of the larger processors feel that the small private farmers cannot supply the

volume, quality, or consistency that they require. Over time, this will favor agricultural organizations or the development of a type of co-op structure.

Demand

Considering Tables 6 and 8, it is clear that Russian consumption and demand for meat are growing. General consumption of pork, beef, and poultry have increased 18, eight, and 39 percent, respectively, since 1999. Since 1999, consumption of the primary meat product, sausage products, increased by 52 percent. However, a look at a longer time frame shows that Russian consumption is actually still trying to catch up to its level from the mid-1990's. It is still quite far behind Soviet meat consumption levels. This just shows that most Russians feel that their optimal meat consumption level is still well above current consumption. Thus, growth will continue to climb for some time as long as the income levels and supply can support the consumption.

Recent growth is clearly linked to the sustained upswing that the Russian economy has exhibited since the economic crisis of 1998. The growth in government budgets shows up in one particularly vulnerable group: pensioners. This group is important because of the origin of their incomes and the way that it is spent.

Pensioners form the most vulnerable group of consumers in terms of income. Obviously, these people rely on government pension payments and this is the key, if not only, source of disposable income. This class generally had all its savings wiped out during the 1990's and now must make very careful spending decisions. They are a class that will be very heavily influenced by the state of the Russian Government and its ability to pay full and adequate pensions on time. When this does not happen, these people cut the area that encompasses most of their budget, food. (Alternatively, rural pensioners increase livestock holdings.) During the last several years the Russian Government has been able to pay pensions on time and been raising the level with some frequency. This has allowed the older section of the population to put this extra purchasing power into their food budgets. Meat purchases by this group grow significantly with each extra dollar of disposable income. However, this group is still very budget conscience and the lowest cost meat item remains sausage products. Sausage products are much more likely to attract the extra disposable income because sausage is cheaper, has a longer shelf life, and requires little preparation. All these factors make sausage demand especially strong among older Russian consumers. Other forms of meat generally form a secondary function for most pensioners. Canned meat is generally of lower quality and price than sausage and not as popular. Fresh, chilled, or frozen cuts of meat are not consumed as frequently as sausage and are usually purchased from wet markets or small local food stores.

Overall income growth is more straightforward for the rest of the urban population, as it spurs increased expenditures on food, especially meat products. Seemingly, most average Russians use meat consumption as a type of barometer of their own economic state. These people remember that consumption was much higher in Soviet times, often discuss the availability and quality of meat currently on the market, and clearly buy more meat products as their income rises. This pattern is essentially the same as exhibited in other countries.

Supply

While highlighting the role of domestic producers is clearly important, overall market supply can only be considered with the inclusion of imports. Since 2000, imports of pork and beef make up about 30 percent of the overall market. Moreover, the government has taken active measures to limit the size of imports since 2003 and has stated that it wants to maintain some level of restriction possibly up to 2010. (For details of the current meat import policy,

see reports RS3018 and RS3050). The government is capping overall import levels, while permitting domestic producers to capture the steady consumption growth. However, imports will likely continue to play a significant role as the Russian production slowly increases.

Therefore, the market is essentially split into three almost equal pieces, with agricultural organizations and small farmers each taking about 35 percent of the total supply and imports 30 percent. As mentioned above, household plots produce meat that is usually sold at local markets, but not to processors and retail outlets.

Considering all the factors mentioned above, the production of small farmers combines with imports to allow for a surprisingly flexible supply of meat (65 percent of the market), even in times of uncertain production on industrial farms. While imports can easily fill supply gaps, the government has made it clear that domestic production is a priority. Thus, large domestic producers (agricultural organizations) are realistically the only group that will continue production/herd increases over the long term. Over the next decade or more, agricultural organizations, with the government's support, will slowly increase their share of total production in comparison to household plots.

Meanwhile, Table 5 shows that the number of animals (swine and beef cattle) on household plots has remained steady or increased over both good and bad economic and agronomic periods. The trend seems to indicate that these families are going to keep some livestock over the long term as a store of wealth because the overall macroeconomic improvement does not filter quickly to the rural poor. By extension, this means that the household plot will remain the main source of animal protein for rural families and for small towns and cities, especially those that are farther from the main ports of entry for imported meat.

Household plots also provide the overall Russian market with a service by providing a buffer stock of low input meat. As mentioned above in the feed section, household plots are outside the regular input cycle and will not sharply fall when commercial feedstocks are low or there are localized input difficulties. Alternatively, household livestock production becomes more stable or grows as rural residents seek a hedge against an uncertain rural economy. In the future, the question is if the market can incorporate and foster these small farmers (their initiative and hardiness) in terms of input supplies and outputs in the form of coops or other sales vehicles.

Summary

The supply section quickly outlined some important observations which show how the three supply components can change and also provide a clue as to potential price effects due supply shocks.

The small farmers act as a supply buffer also seem to act as price takers because each of these individuals is making input and slaughter decisions on a small scale and essentially independent of each other. As individual decisions, the fact that the animals are a store wealth as well as an income stream has shown that these farmers have not made mass, drastic decisions (such as a huge herd cull or complete withdrawal from the market). As such, the data seems to point out that all these individual decisions has led to an amazing amount of consistency and continuity. That is very important when this accounts for 50 percent of domestic production and 35 percent of total supply.

Imports are much easier to analyze and quantify than Russian domestic production, yet the influence of imports cannot be discounted. When the government assumed complete control (import TRQs) over 30 percent of total supply and makes this "supply decision" once per year, it is taking a serious chance regarding its assumptions about the changes in this far

from mature and stable market. Of the three sectors, this rigid, non-market decision would seem to bring the greatest risk of shorting supply and rising prices.

Lastly, the slow re-emergence of agricultural enterprises is clearly the hope (and intention) of Russian industry and government. However, many of these enterprises are facing tough times (an estimated 92 percent are unprofitable) and this revival has many hurdles to overcome to become the main supplier of meat to the Russian consumer. These companies are the most difficult to analyze in terms of price because sales price and production cost can vary significantly. Sales prices often vary based on the relationship producers have with processors and if that processor produces a wide range (including high quality) products and if there is direct competition with imports. Thus, imports and large domestic producers are the overwhelming competitors and price setters on the wholesale markets and with processors. As shown above, agricultural enterprises have such a wide range of variables built into the production cost (feed, social, labor, infrastructure), effective management has an enormous impact on the cost of production.

In summary, the fortitude and resilience of the small household farmers in the Russian livestock sector is not in doubt. These people will continue to be the primary source of meat for a large portion of the Russian population for many years to come. However, the slow re-emergence of medium and large-scale industrial production of meat is the key the future of the livestock sector in Russia.

Table 9. The Most Efficient Swine Farms of Russia, as an average of 1998-2002

Farm	Number of swine	Production cost, rubles per 100 kilos	Farm meat price, rubles per 100 kilos	Profitability of sold meat, % *
OAQ" Omskiy Bekon", Omsk	211,281	1,762	2,857	62.1
SVKh"Permskiy", Perm	128,993	2,140	2,299	7.4
ZAO "Volzhskoye", Tver	67,057	2,235	2,609	16.7
KPH, "Frunze", Belgorod	30,498	1,074	2,060	91.7
ZAO SK "Industrial'niy" Krasnodar	67,001	1,687	2,149	27.4
ZAO"Krasnodonskoye", Volgograd	55,803	1,707	2,095	22.7
SkhPK "Usolskii Pork Farm", Irkutsk	63,515	2,019	2,289	13.4
State Farm "Zvenigovski", Mariy-El, Rep.	19,618	1,685	2,570	52.5
State Farm "Roshchinskiy", Bashkortostan	38,552	2,088	2,259	8.2
Pedigree Farm "Yubileyniy", Tumen	44,833	1,275	2,301	80.4

Source: Krestiyanskiye Vedomosti, January 2002.

* Ratio between profits from meat sold and average number of head.